



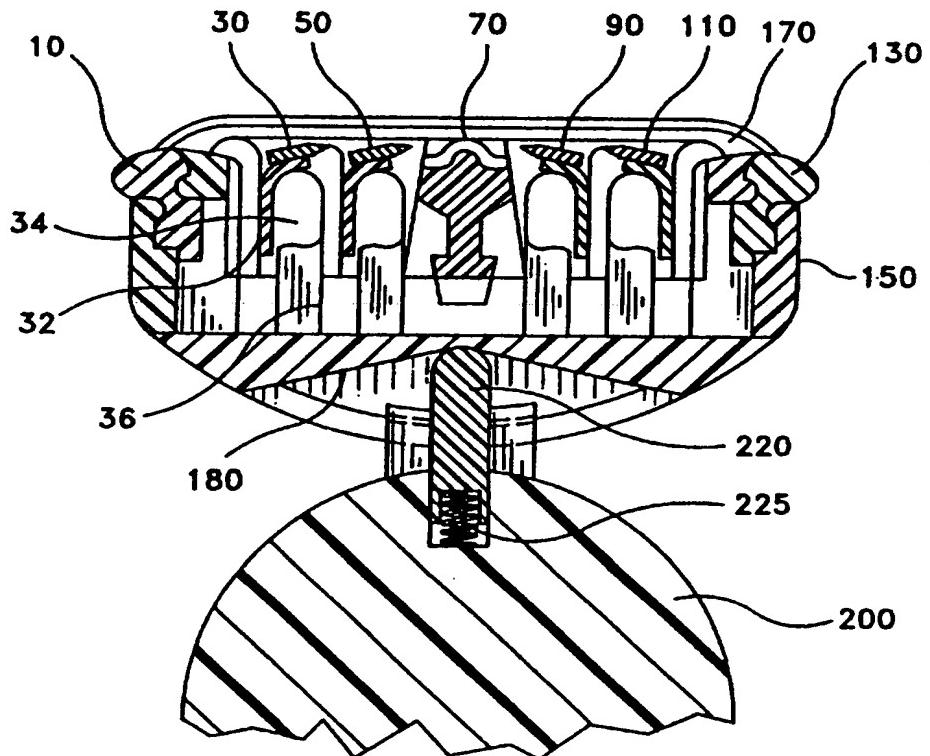
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(54) Title: MULTI-DIRECTIONAL DYNAMIC SHAVING SYSTEM

(57) Abstract

Shaving systems comprising at least one movable blade (30, 50) facing in a first direction with at least one other blade (90, 100) facing in another direction. A preferred embodiment includes an independently movable guard bar (70) positioned between opposing movable blades and a pivoting support (220) for pivotally supporting the razor head for pivotal movement about an axis substantially parallel to the blade edges and positioned proximate the central, common guard bar. A preferred embodiment of the present invention comprises four independently movable blades (30, 50, 70, 100) which share a common, independently movable guard bar, (70) mounted upon a pivotal support (220).



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MULTI-DIRECTIONAL DYNAMIC SHAVING SYSTEM

5 The present invention is directed to a shaving system and, more particularly, to a multi-directional, dynamic shaving system designed to provide a close, comfortable shave when drawn across skin in one of a plurality of different directions.

10 BACKGROUND OF THE INVENTION

In certain shaving applications, it is desirable to provide a razor head which will cut hair when moved across the skin surface being shaved in either of at least two directions. For example, shaving difficult to reach areas can be facilitated by providing the person shaving with the option of moving the shaving system in either of at least two directions across those areas. Several 5 shaving systems have been suggested which provide opposing blade edges, i.e., two rigid blades which are positioned such that the shaving edges face each other. In each of those designs, which are known to the present inventor, the blades are held fixed in a housing. Therefore, the leading 10 blade is not disposed in a cutting attitude to the hair on the skin surface and will tend to scrape the skin before 15 the cutting blade reaches the hair to be cut.

Furthermore, the previously disclosed shaving systems having opposing blades will not allow the blades to yield in order to accommodate various skin textures and contours.

20 In light of the shortcomings of the previously disclosed shaving systems having opposing blades, it would be desirable to provide a shaving system adapted for multi-directional shaving which also eliminates the rigid scraping of the surface being shaved by a leading, non-cutting blade.

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It would also be desirable to provide a multi-directional shaving system which is otherwise designed to provide a more comfortable shave.

SUMMARY OF THE INVENTION

5 The various embodiments of the present invention comprise shaving systems having opposing, movable blades. According to one preferred embodiment, a razor head is provided with two independently movable blades facing in a first direction with two opposing, independently movable
10 blades facing in a second, opposite direction. A preferred aspect of this embodiment includes an independently movable guard bar positioned between the central, opposing blades and a pivoting support for pivotally supporting the razor head for pivotal movement about an axis substantially parallel to the blade edges and positioned proximate the
15 central, common guard bar.

While a preferred illustrated embodiment of the present invention comprises a razor head with four independently movable blades which share a common, independently movable guard bar mounted upon a pivotal support, the advantages of the present invention may be realized with a different number of blades and/or guard bars, as well as different configurations.

BRIEF DESCRIPTION OF THE DRAWINGS

25 Figure 1 is a perspective view of one embodiment of the present invention.

Figure 2 is a partial cross-sectional view of Figure 1 taken along lines 2-2.

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Figure 3 is a side view of the embodiment illustrated in Figure 1.

Figure 4 is a front view of the embodiment shown in Figure 1.

5 Figure 5 is a bottom, plan view of the razor head shown in Figure 1.

DETAILED DESCRIPTION

The various embodiments of the present invention comprise shaving systems having at least two movable blades disposed with the cutting surfaces of the blades facing different directions, most preferably facing each other. One preferred embodiment of the present invention comprises two sets of independently movable blades disposed in opposing relation and an independently movable guard bar disposed between the opposing blades. This embodiment is in the form of a razor head which is pivotally mounted to a razor so that the skin-engaging members pivot about an axis which is parallel to a plane defined by the cutting edges of the blades. A most preferred embodiment comprises a pivotal connection wherein the blades pivot about an axis which is common to the skin-engaging surface of a centrally located guard bar. While the illustrated embodiment is in the form of a razor head, the present invention includes other forms of shaving systems which may benefit from the advantages. As used herein, the term "razor head" is meant to include cartridges which are designed and manufactured for attachment to a separate razor, as well as the operative portion of a disposable razor wherein the skin-engaging portions are integrally formed with a handle section.

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With reference to the figures, the illustrated embodiment comprises a razor head having a leading shaving aid 10, an outer, rearwardly facing blade 30, central rearwardly facing blade 50, a movable guard bar 70, a 5 movable, forwardly facing central blade 90, an outer, forwardly facing blade 110 and a trailing shaving aid 130. According to this preferred embodiment, all four blades and the central guard bar are supported by resilient spring fingers for independent movement in response to forces 10 encountered during shaving. The movable elements are disposed within a housing 150 which is pivotally connected to a razor 200. While many forms of razors can be employed, the preferred, illustrated razor head is provided with a central recess 210 on both sides thereof in order to 15 facilitate gripping of the razor between the user's thumb and index/middle fingers.

As shown in Figure 2, outer, rearwardly facing blade 30 is attached to a blade support 32 which is resiliently supported for vertical movement by a resilient 20 spring member 34. The upper movement of resilient spring members 34 can be restricted by end walls 36 formed in the interior side walls of the razor head. The illustrated type of resilient spring finger 34 is known to those skilled in the art and is, therefore, not illustrated in 25 detail therein. In a similar fashion, the other blades are resiliently supported in this illustrated embodiment. The particular structure used for providing movement to one or more of the blades and/or guard bars can be selected from any of several types which have been previously disclosed 30 or are heretofore conceived without departing from the scope of the present invention. Furthermore, while the illustrated blades are shown as being attached to separate blade supports, such as blade support 32, it is also within the scope of the present invention to provide a movable 35 blade without the need for a separately formed blade

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support. In the illustrated embodiment, the other three blades are similarly provided with blade supports and resilient spring fingers.

Those skilled in the art will appreciate that the movement of the blades and guard bar during shaving will result in changes to the shaving geometry of this razor head. For example, the blade exposure and spans between the cutting edges of a blade and the face-engaging element disposed forwardly of that blade will change as the elements move. In order to limit the degree of possible shaving geometry changes, the upward movement of the blades and guard bar is limited by a band 170 which wraps around the side ends of the razor head. The band, may be formed of any suitable material, such as plastic or a malleable metal.

In order to provide pivotal movement to the illustrated razor head, the housing 150 comprises a lower cam surface 180 which angles downwardly from a central apex. A biasing member 220 of razor 200 pushes upwardly against cam surface 180 in response to upward forces provided by preloaded spring 225 thereby normally urging housing 150 into a neutral position as shown in Figure 2. Biasing member 220 is sufficiently resilient to permit housing 150 to pivot in response to forces encountered during shaving, thereby optimizing the contact between the blades and the surface being shaved.

In order to releasably secure housing 150 to razor 200, a pair of movable securing members 230 of razor 200 engage retainers 190 located on the bottom of housing 150. The securing members 230 of the illustrated embodiment are inwardly moveable in response to actuation of an actuator 250 in order to allow attachment and detachment of a razor head to razor 200. The engaging

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surfaces of securing member 230 and retainers 190 are advantageously curved in order to facilitate the smooth, pivotal movement of the razor head during shaving.

5 While alternative embodiments are within the scope of the present invention, a preferred embodiment provides for pivotal movement of housing 150 about an axis which is preferably proximate to, and most preferably on, the skin-engaging surface of central guard bar 70. This axis is also preferably proximate to, and most preferably 10 coincident with, a plane passing through the blade edges. The positioning of the pivotal axis in this location advantageously maintains optimum contact between the skin-engaging members and the skin surface.

15 According to another aspect of the present invention, at least one of the cutting edges is provided with a fencing element which passes over one or more of the cutting edges. Such a fencing element may be formed as a continuous filament which is spirally wound around one or 20 more of the blades. It is also within the scope of the present invention to use a plurality of discrete fencing elements and/or fencing elements which are deposited in recessed guard seats such as those disclosed in U.S. Patent No. 4,211,006 to Halaby et al., and assigned to the same assignee as the present invention, which is hereby 25 incorporated by reference. Furthermore, one or more fencing elements can be formed as a stamped sheet, e.g. by stamping holes in a metallic foil. While such fencing elements typically comprise metal, other forms of fencing elements may also be employed without departing from the 30 scope of the present invention. For example, techniques have been disclosed in U.S. Patent Application No. 645,055 filed December 29, 1975 by Beddall entitled Printed Blade Shield, and in U.S. Patent No. 4,252,837 to Auton entitled Blade Shields, all being assigned to the assignee of the

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present invention, and hereby incorporated by reference, which disclose methods for placing fencing elements on a blade edge. Specifically, epoxy resins may be placed on the edge and flanking facets of a blade using ink jet printing techniques or, alternatively, the fencing elements may be deposited by sputtering or ion plating.

5 Furthermore, the aforementioned U.S. Patent No. 4,122,006 to Halaby, et al., discloses a razor blade having fencing elements deposited in recessed seats formed in the cutting 10 edge and flanking surfaces of the blade by electroplating. Any one or more of these forms of fencing elements may be utilized within the scope of the present invention.

15 The materials used for forming the various elements of the razor head may include a wide variety of materials. For example, it is known in the art to use thermoplastics which are particularly suited for injection molding and which have excellent durability and shelf life in the environments typically encountered during shaving, shipping and storing.

20 Another preferred aspect of the present invention comprises the incorporation of a shaving aid on one or more of the skin-engaging surfaces of the shaving system. The illustrated embodiment advantageously comprises shaving aid 10 on the leading sidewall of housing 150 as well as 25 shaving aid 130 disposed on the trailing side of sidewall 150. In this manner, the skin surface being shaved is provided with the advantageous effects of the shaving aid both prior to contact with the sharpened blade edges and after the blade edges have passed over the shaved surface.

30 As disclosed in U.S. Patent No. 4,170,821 to Booth, which is hereby incorporated by reference, a shaving aid may comprise one or various combinations of the following:

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A. A lubricating agent for reducing the frictional forces between the razor and the skin, e.g., a micro-encapsulated silicone oil.

5 B. An agent which reduces the drag between the razor parts and the shaver's face, e.g., a polyethylene oxide in the range of molecular weights between 100,000 and 6,000,000; a non-ionic polyacrylamide; and/or a natural polysaccharide derived from plant materials such as "guar gum".

10 C. An agent which modifies the chemical structure of the hair to allow the razor blade to pass through the whiskers very easily, e.g., a depilatory agent is one example.

15 D. A cleaning agent which allows the whisker and skin debris to be washed more easily from the razor parts during shaving, e.g., a silicon polyethylene oxide block copolymer and detergent such as sodium lauryl sulphate.

20 E. A medicinal agent for killing bacteria, or repairing skin damage and abrasions.

F. A cosmetic agent for softening, smoothing, conditioning or improving the skin.

25 G. A blood coagulant for the suppression of bleeding that occurs from nicks and cuts.

Alternatively, the shaving aid may comprise one or more of the shaving aids disclosed in U.S. Patent No. 5,056,221 to Thoene, U.S. Patent No. 4,044,120 to Rowsell et al., U.S. Patent No. 5,095,619 to Davis et al., or Japanese Patent Application No. Hei 7 [1995] - 24156 to Miyazaki, et al. which are also hereby incorporated by reference.

While the illustrated embodiment comprises a single, movable, centrally located guard bar 70 having a generally rounded upper portion, it is also within the

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scope of the present invention to provide one or more guard bars in different locations and/or having different configurations. For example, instead of a single centrally located guard bar, the present invention can comprise a plurality of guard bars or guard surfaces between the central, opposing blades or between blades which face the same direction.

It is also within the scope of the present invention to provide one or more guard surfaces having flatter skin-engaging portions. Furthermore, the skin-engaging portion of the guard bar may be provided with one or more shaving aids, such as those described herein. It is also within the scope of the present invention to provide a central guard bar which is either movable or stationary, with a skin-engaging resilient material, for example, a synthetic rubber-like compound which is resilient and has a higher coefficient of friction with skin surfaces than conventional, rigid polymers such as polypropylene. By providing a higher coefficient of friction between the guard surface and the skin surface being shaved, it is possible to achieve a higher degree of control over the skin as the skin flows over the blades.

Those skilled in the art will appreciate that a wide variety of engineering materials may be utilized in forming elements of the various embodiments of the present invention in order to impart desired perceptible sensations to the person shaving.

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WHAT IS CLAIMED IS:

- 1 1. A shaving system comprising:
2 a blade support;
3 a first movable blade comprising a cutting
4 edge facing in a first direction; and
5 a second blade comprising a cutting edge
6 facing in a second direction which is different from said
7 first direction.

- 1 2. A shaving system according to claim 1
2 wherein said second blade is movable with respect to said
3 support.

- 1 3. A shaving system according to claim 1
2 wherein said second direction is substantially opposite
3 said first direction.

- 1 4. A shaving system according to claim 1
2 further comprising a guard bar disposed between said first
3 blade and said second blade.

- 1 5. A shaving system according to claim 4
2 wherein said guard bar is movable.

- 1 6. A shaving system according to claim 4
2 wherein said guard bar is movable independent of said
3 blades.

- 1 7. A shaving system according to claim 4
2 wherein said guard bar comprises a shaving aid.

- 1 8. A shaving system according to claim 4
2 wherein said guard bar comprises a material being a higher
3 coefficient of friction with skin than polypropylene.

- 1 9. A shaving system according to claim 1

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2 wherein said second blade is movable independent of
3 movement of said first blade.

1 10. A shaving system according to claim 1
2 further comprising at least one additional blade.

1 11. A shaving system according to claim 1
2 comprising two movable blades comprising cutting edges
3 facing said first direction and two movable blades
4 comprising cutting edges facing said second direction.

1 12. A shaving system according to claim 11
2 wherein said blade support is pivotally connected to a
3 razor.

1 13. A shaving system according to claim 11
2 further comprising a guard bar disposed between a blade
3 facing said first direction and a blade facing said second
4 direction.

1 14. A shaving system according to claim 13
2 wherein said guard bar is movable.

1 15. A shaving system according to claim 13
2 wherein said guard bar is independently movable.

1 16. A shaving system according to claim 13
2 wherein said guard bar comprises a shaving aid.

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1 17. A shaving system according to claim 13
2 wherein said guard bar comprises a material being a higher
3 coefficient of friction with skin than polypropylene.

1 18. A shaving system according to claim 1
2 wherein said blade support is pivotally connected to a
3 razor.

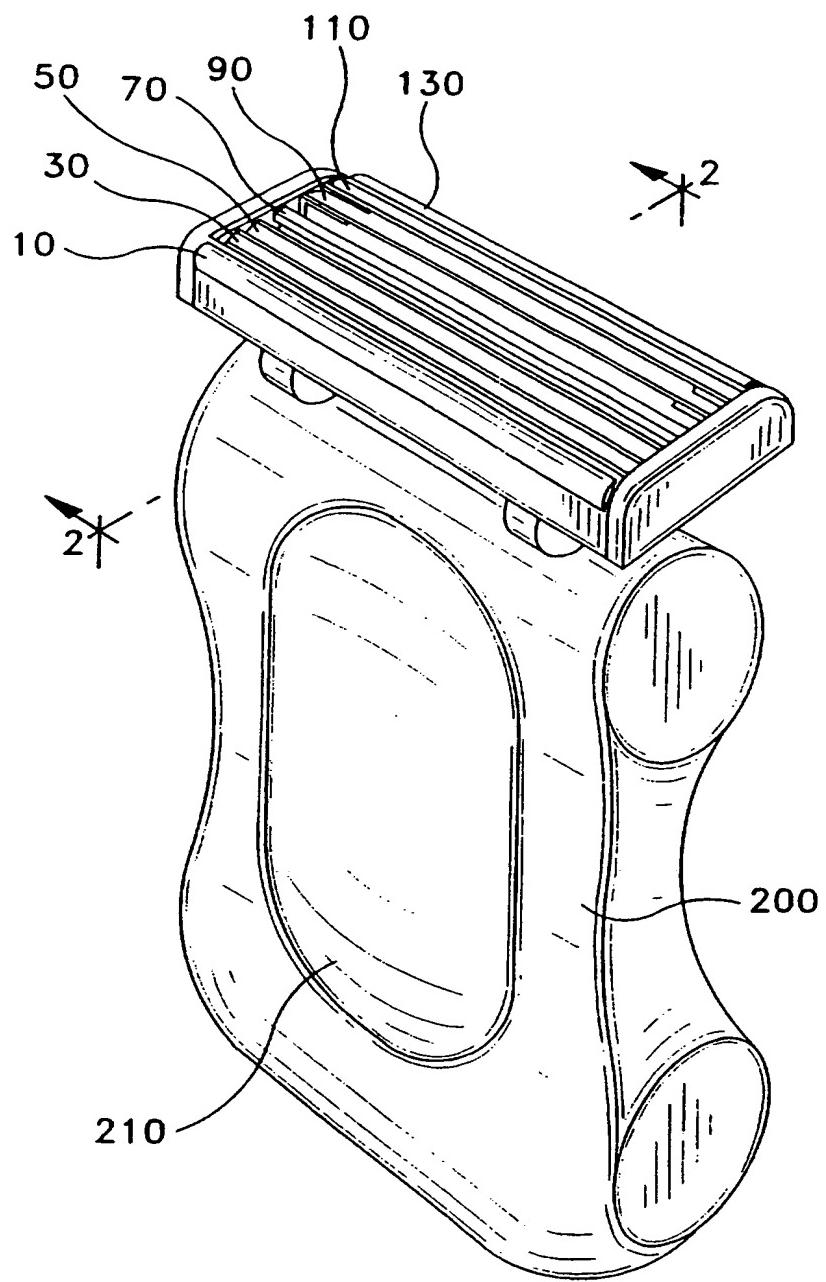
1 19. A shaving system according to claim 18
2 wherein said shaving system further comprises a guard bar
3 comprising a skin-engaging surface and said blade support
4 pivots about an axis disposed proximate to said skin-
5 engaging surface of said guard bar.

1 20. A shaving system according to claim 18
2 wherein said shaving system further comprises a guard bar
3 comprising a skin-engaging surface and said blade supports
4 pivots about an axis disposed on said skin-engaging surface
5 of said guard bar.

1 21. A shaving system according to claim 1
2 wherein said blade support is pivotally connected to a
3 razor for pivotal movement about an axis which is proximate
4 a plane defined by said cutting edges of said first blade
5 and said second blade.

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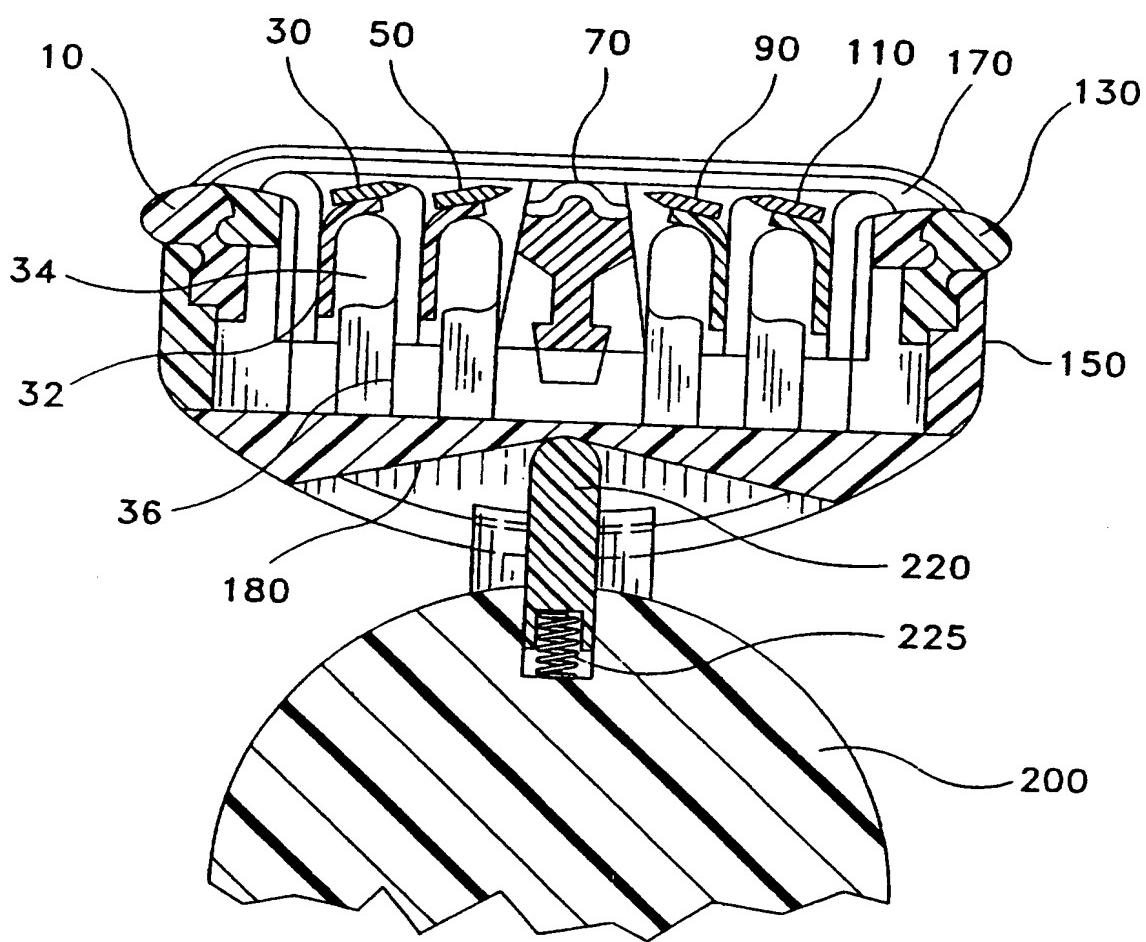
FIG-1



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FIG-2



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FIG-3

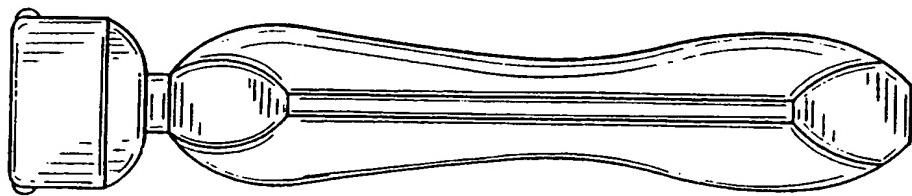
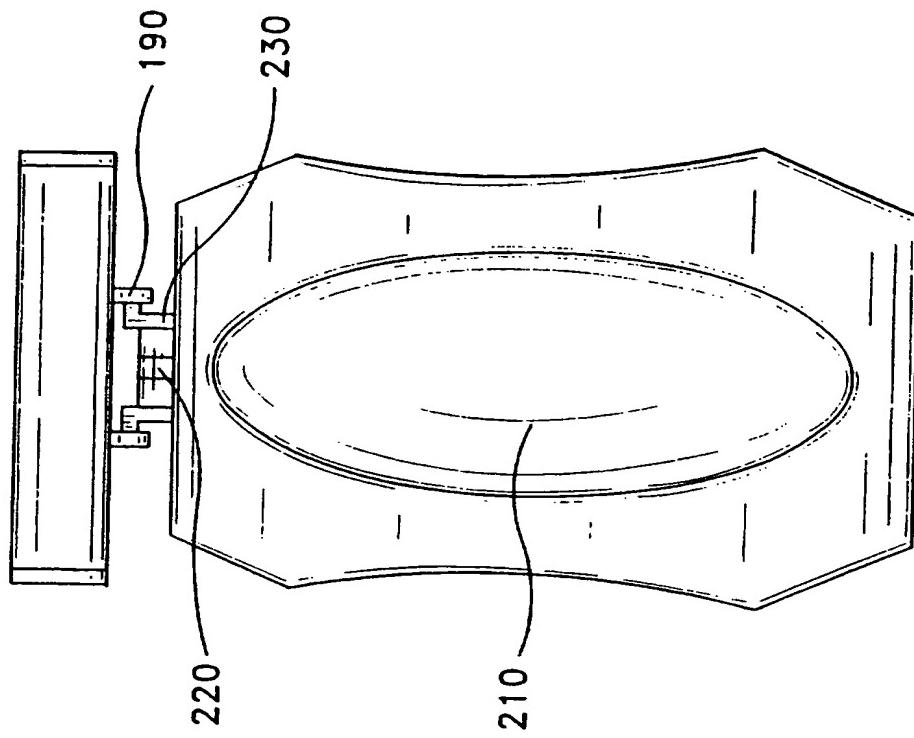


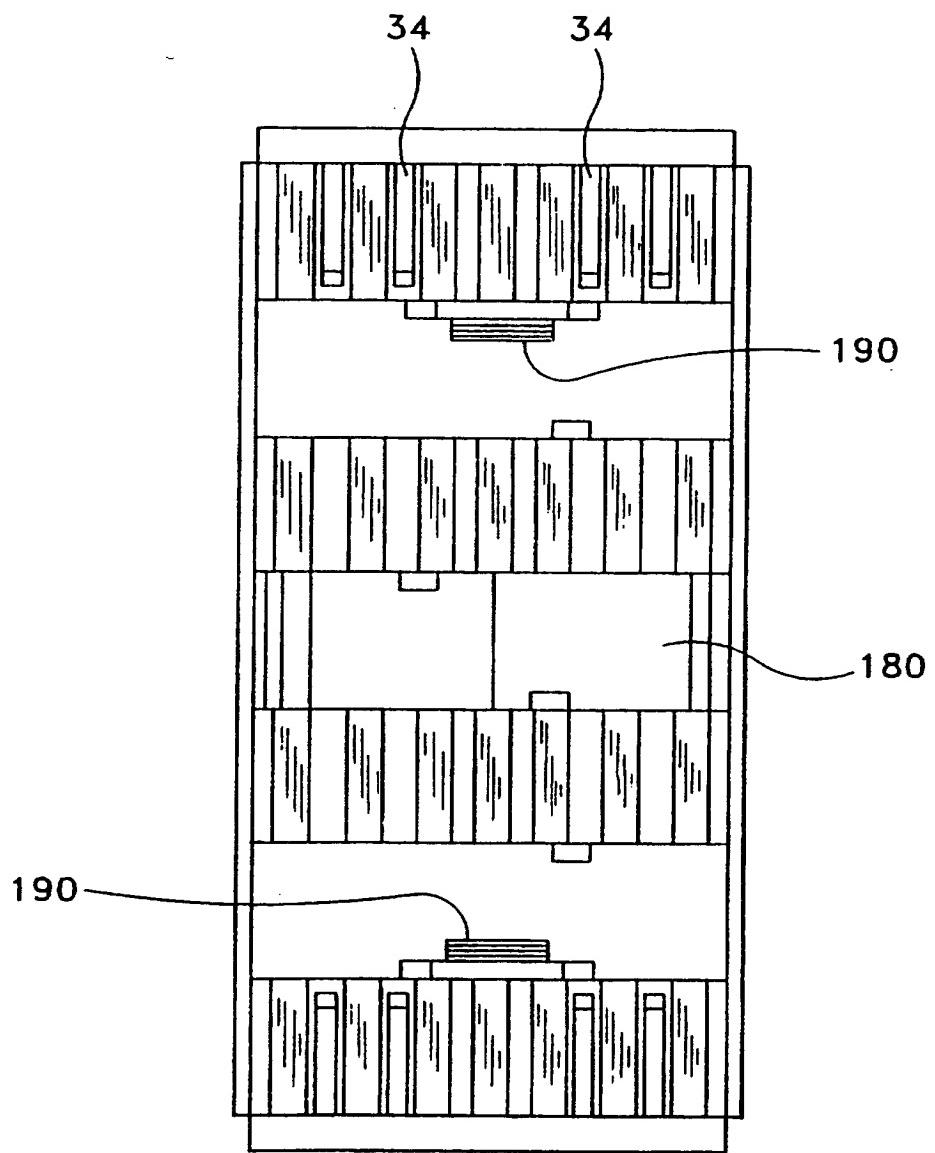
FIG-4



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FIG-5



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INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B26B21/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B26B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR,A,2 379 357 (THE GILLETTE CO) 1 September 1978 see page 6, line 19 - page 7, line 16; figures 8,9	1-3, 9-12,18, 21
A	US,A,4 501 066 (C T SCEBERRAS) 26 February 1985 see column 2, line 10 - line 34; figure 2	4,14
A	US,A,5 095 619 (I J DAVIS JR) 17 March 1992 cited in the application see the whole document	7,8,16, 17

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
3 July 1996	19.07.96

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INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR,A,2 129 698 (THE GILLETTE CO) 27 October 1972 see page 17, line 17 - page 18, line 31; figures 28,29 ---	1
A	US,A,5 084 968 (R A TROTTA) 4 February 1992 ---	
A	CH,A,620 393 (A J DE FLIEDNR) 28 November 1980 ---	
A	US,A,5 343 622 (E A ANDREWS) 6 September 1994 -----	

1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 96/02296

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
FR-A-2379357	01-09-78	GB-A-	1566505	30-04-80
		AR-A-	215673	31-10-79
		AU-B-	511615	28-08-80
		AU-B-	3235078	19-07-79
		BE-A-	862468	14-04-78
		CA-A-	1067281	04-12-79
		DE-A-	2803371	03-08-78
		JP-C-	1381918	09-06-87
		JP-A-	53097549	25-08-78
		JP-B-	61051910	11-11-86
		NL-A-	7714517	04-08-78
		US-A-	4168571	25-09-79
-----	-----	-----	-----	-----
US-A-4501066	26-02-85	NONE		-----
-----	-----	-----	-----	-----
US-A-5095619	17-03-92	AT-T-	139170	15-06-96
		AU-B-	655604	05-01-95
		AU-B-	8750291	28-04-92
		CN-A-	1060244	15-04-92
		CZ-A-	9300448	16-02-94
		EP-A-	0551407	21-07-93
		JP-T-	6501634	24-02-94
		PL-B-	168895	30-04-96
		TR-A-	26206	15-02-95
		WO-A-	9205925	16-04-92
-----	-----	-----	-----	-----
FR-A-2129698	27-10-72	US-A-	3832774	03-09-74
		AT-B-	365963	25-02-82
		AU-B-	450720	18-07-74
		AU-B-	3982372	23-05-74
		BE-A-	780296	03-07-72
		CA-A-	979202	09-12-75
		CA-A-	976736	28-10-75
		CA-A-	985890	23-03-76
		CH-A-	565631	29-08-75
		CH-A-	572384	13-02-76
		CH-A-	571937	30-01-76
		DE-A-	2264550	02-05-74
		DE-A-	2265076	01-07-76
		DE-A-	2213023	18-01-73

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte^rna^l Application No
PCT/US 96/02296

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
FR-A-2129698		DE-A- 2264551		04-04-74
		GB-A- 1362441		07-08-74
		GB-A- 1362442		07-08-74
		GB-A- 1362443		07-08-74
		JP-C- 1153188		30-06-83
		JP-A- 53040357		12-04-78
		JP-B- 57044354		21-09-82
		NL-A- 7203329		19-09-72
		SE-A- 7507058		18-06-75
		SE-B- 431305		30-01-84
		SE-A- 7700096		05-01-77
		US-A- 3724070		03-04-73
		AT-B- 337045		10-06-77
		CA-A- 981896		20-01-76
		CA-A- 975946		14-10-75
		US-A- 3703764		28-11-72
		AT-B- 346730		27-11-78
		CA-A- 961255		21-01-75
		JP-A- 53056556		23-05-78
		NL-A- 8000678		30-05-80
		SE-B- 431306		30-01-84
		SE-A- 7700097		05-01-77
		US-A- 3786563		22-01-74
<hr/>				
US-A-5084968	04-02-92	AU-B- 8754091		30-03-92
		EP-A- 0548278		30-06-93
		JP-T- 6500488		20-01-94
		WO-A- 9204163		19-03-92
<hr/>				
CH-A-620393	28-11-80	NONE		
<hr/>				
US-A-5343622	06-09-94	WO-A- 9607515		14-03-96
		AU-B- 7955094		27-03-96
		US-A- 5522137		04-06-96
<hr/>				